

WHAT IS CLAIMED AS NEW AND IS DESIRED TO BE SECURED BY LETTERS  
PATENT OF THE UNITED STATES IS:

1. A programmed processor-based information browsing device comprising:

5 a body having a sensor device comprising a position sensor and a force sensor disposed on a sensor area of said body, said sensor device producing a position signal and a force signal corresponding to a position and a force of an instrument applied to said sensor device;

10 at least one set of sensors actuatable by said instrument, disposed on said body;

a processor coupled to said sensor device and said at least one set of sensors, said processor being programmed to,

15 receive said position and force signal and produce at least one corresponding transducer signal that is readable by a programmed computer,

produce at least one state signal when at least one of said set of sensors is actuated by said instrument, and

20 output via an output port the at least one transducer signal and said at least one state signal to the computer, wherein

said programmed computer hosts a set of information, said at least one corresponding transducer signal and said at least one state signal forming at least one of a direction of  
25 movement command, a change of speed command, a jump to a specified location command, and a bookmark command

recognizable by said programmed computer as user-actuated commands for manipulating a displayed image of said set of information.

2. The device of Claim 1, wherein:

5       said body comprises,

          an opposed top and bottom surface, and

          a sensor surface in which said sensor device is disposed; and

          said set of sensors comprises,

10           a first subset of sensors disposed on said bottom surface that when actuated cause said processor to produce a first state signal of said at least one state signal representative of a state of said first subset of sensors, and

          a second subset of sensors disposed on said top  
15       surface that when actuated cause said processor to produce a second state signal of said at least one state signal representative of a state of said second subset of sensors.

3. The device of Claim 2 further comprising the programmed computer comprising:

20       a computer-readable medium that holds said set of information; and

          another computer-readable medium that holds a set of instructions that when executed by the programmed computer implement,

25       a receiving mechanism that receives said at least one transducer signal, said at least one transducer signal

comprising a first force signal and a second force signal respectively generated by said sensor device in response to said instrument applied to a first position along one direction of said sensor device and later applied to a second position of said sensor device,

a jumping mechanism that produces a jump from a first point in said set of information corresponding to said first position to a second point in the set of information corresponding to the second position, and

a skipping mechanism that produces a skip of a subset of said set of information proportional to a distance between said first position and said second position.

4. A computer based browsing system comprising:

a browsing device comprising,

a sensor device comprising a position sensor and a force sensor, said sensor device producing a position signal and a force signal corresponding to a position and a force of an instrument applied to said sensor device,

at least one set of sensors actuatable by said instrument,

a processor coupled to said sensor device and said at least one set of sensors, said processor being programmed to,

receive said position and force signal and produce at least one corresponding transducer signal that is readable by a programmed computer,

produce at least one state signal when at least one of said set of sensors is actuated by said instrument, and

output via an output port the at least one transducer signal and said at least one state signal to the programmed computer; and

the programmed computer comprising,

a display on which an image of said set of information is displayed in a book format,

a computer-readable medium that holds said set of information,

another computer-readable medium that holds a set of instructions that when executed by the programmed computer implement,

a receiving mechanism that receives said at least one transducer signal and at least one state signal,

a book image display mechanism that displays a book format image of at least a portion of said set of information, and

a changed display mechanism that changes the book format image displayed on said display from specific pages of said book format image being displayed to other pages being displayed, a first portion of said set of information being displayed on said specific pages, and a second portion of said set of information being displayed on said other pages.

5. The system of Claim 4, wherein said another computer-readable medium holds additional instructions that when executed by the programmed computer implement:

a creating mechanism that creates a finger-bookmark based  
5 on said state signal received by said receiving mechanism,

a finger-bookmark image display mechanism that displays an image of a finger-bookmark on said book format image, said display mechanism comprising,

a removing mechanism that removes said  
10 finger-bookmark image when a currently displayed subset of information of said set of information is closer to an end position of said set of information than a position of said finger-bookmark image.

6. The system of Claim 5, wherein said another computer-readable medium holds additional instructions that when  
15 executed by the programmed computer implement:

a permanent-bookmark image display mechanism that displays a permanent-bookmark image in response to receiving said at least one state signal;

a transferring mechanism that transfers said permanent-bookmark image from a first side of said book format image of said set of information to a second side of said book format image of said set of information when the currently displayed subset of information is closer to said end position of said  
20 set of information than a position of said finger-bookmark image; and a simultaneous display mechanism that  
25

simultaneously displays said finger-bookmark image and said permanent-bookmark image.

7. The system of Claim 5, wherein said another computer-readable medium holds additional instructions that when executed by the programmed computer implement:

a page jumping mechanism that jumps to a page of said book format image of said set of information nearest the currently displayed material, said page being marked by at least one of said finger-bookmark or said permanent-bookmark.

8. The system of Claim 5, wherein said another computer-readable medium holds additional instructions that when executed by the programmed computer implement:

a page jumping mechanism that jumps to a page of said book format image in response to receiving said at least one transducer signal and said at least one state signal.

9. A programmed processor-based browsing device comprising:

a left-hand processor-based information browsing device module, comprising,

a first body configured to be operated by a left hand of a user, comprising,

an opposed first top surface and a first bottom surface, and

a first sensor surface having a first sensor device disposed thereon, said first sensor device detecting a position and force of an instrument applied thereto,

a first set of sensors actuatable by said instrument,  
disposed on said first bottom surface, and configured to  
produce a first state signal of at least one state signal  
representative of a state of said first set of sensors,

5 a second set of sensors actuatable by said instrument,  
disposed on said first top surface, and configured to produce  
a second state signal of the at least one state signal  
representative of a state of said second set of sensors,

a right-hand processor-based information browsing device  
10 module operatively joined to said left-hand computer-based  
information browsing device, comprising,

a second body configured to be operated by a right  
hand of a user, comprising,

an opposed second top surface and a second  
15 bottom surface, and

a second sensor surface having a second sensor  
device disposed thereon, said second sensor device detecting a  
position and force of an instrument applied thereto;

a third set of sensors actuatable by said instrument,  
20 disposed on said second bottom surface, and configured to  
produce a third state signal of the at least one state signal  
representative of a state of said third set of sensors, and

a fourth set of sensors actuatable by said instrument,  
disposed on said second top surface, and configured to produce  
25 a fourth state signal of the at least one state signal  
representative of a state of said fourth set of sensors; and

a processor coupled to at least one of said first sensor device and said second sensor device and programmed to convert the force and position of the instrument into at least one transducer signal and output the at least one transducer  
5 signal and the at least one state signal to a computer, said computer hosting a set of information, as least a portion of which is displayed as a book format image on a display.

10. The device of Claim 9, wherein said processor further comprises:

10 a computer readable medium having,

a right-hand transducer program contained therein that when executed by said processor converts the force and position of the second sensor device into a forward browsing signal used by said computer to browse the information in a  
15 forward direction; and

a left-hand transducer program contained therein that when executed by said processor converts the force and position of the first sensor device into a backward browsing signal used by said computer to browse the information in a  
20 backward direction, wherein a speed of browsing in either the forward or the reverse direction is proportional to the force respectively applied to said second sensor device and said first sensor device.

11. The device of Claim 10, wherein:

25 said processor when executing said right-hand transducer program producing a forward jump signal corresponding to the

force applied at a position along a first direction of said second sensor device indicative of a forward point in the set of information in which to jump, said forward point in which to jump located between a portion of said information

5 currently being displayed, and an end of said information; and

said processor when executing said left-hand transducer program producing a backward jump signal corresponding to the force applied at a position along a first direction of said first sensor device indicative of a backward point in which to jump located between said portion of material currently being viewed and a beginning portion of said information.

12. The device of Claim 9, wherein:

said processor being programmed to produce a set of right-hand bookmark signals corresponding to respective states of said third set of sensors, each of said set of right-hand bookmark signals corresponding to a command output to said computer to place a right-hand bookmark on said information currently being displayed; and

said processor produces a set of left-hand bookmark signals corresponding to respective states of said first set of sensors, each of said set of left-hand bookmark signals corresponding to a command output to said computer to place a left-hand bookmark on said information currently being viewed.

13. The device of Claim 10, further comprising the programmed computer comprising:

a computer-readable medium that holds said set of

information; and

another computer-readable medium that holds a set of instructions that when executed by the programmed computer perform the steps of,

5           organizing the information into a plurality of pages,

          receiving said at least one transducer signal which comprises an initial force signal and an opposing force signal from respective ones of said first sensor device and said  
10       second sensor device initial force signal,

          displaying said pages of said book format image being flipped in response to said initial force signal received in said step of receiving said initial force signal,

          receiving said opposing force signal,

15       stopping said pages from being flipped in said displaying step in response to receiving said opposing force signal, and

          displaying an image of a resting position of two pages lying in an open fan format.

20       14. The device of Claim 13, wherein:

          said at least one transducer produces said opposing force signal by first producing a first signal indicative of a first force applied in a first position of said at least one first sensor device or said second sensor device and then producing  
25       a second signal indicative of a second force applied in a second position of said at least one first sensor device or

said second sensor device, and

said computer-readable medium holds instructions that when executed by the programmed computer perform the steps of, preventing said pages from being completely flipped to an end of said information in response to said step of receiving said opposing force signal, and

displaying an image of the flipped pages collected in a central-thick page positioned at approximate angles between the two flat pages.

15. The device of Claim 2, wherein:

said body is contained in a user input device comprising at least one of a mouse, track-ball and a gyro-mouse; and

the programmed computer, which receives said at least one transducer signal and said at least one state signal, comprising a computer readable medium holding a program that when executed by said programmed computer performs the steps of,

receiving a signal from said user input device, and selecting in response to receiving said signal an item of interest on a currently displayed page of an image of a set of pages of said set of information.

16. The device of Claim 15, wherein said computer readable medium comprises a bookmarking program that when executed by the computer performs the step of bookmarking a plurality of pages of said set of information, said pages containing information related to said selected item.

17. A computer based information browsing system,  
comprising:

a processor-based information browsing device comprising,  
a body comprising,

5 an opposed top and bottom surface, and  
a sensor surface having a sensor device  
disposed thereon, said sensor surface detecting a position and  
force of an instrument applied thereto,

a first subset of sensors actuatable by said  
10 instrument, disposed on said bottom surface, and configured to  
produce a first state signal of at least one state signal, and

a second subset of sensors actuatable by said  
instrument, disposed on said top surface, and configured to  
produce a second state signal of said at least one state  
15 signal,

a processor coupled to said sensor device and  
programmed to convert the force and position of the instrument  
on the sensor device into at least one transducer signal and  
output the at least one transducer signal and the at least one  
20 state signal;

a programmed computer comprising,

a display,

a computer-readable medium that holds said set of  
information, and

25 another computer-readable medium that holds a set of  
instructions that when executed by the programmed computer

implement steps of,

receiving the at least one transducer signal  
indicative of at least one of an amount of force applied by a  
user to a sensor on said browsing device and a position on  
5 said sensor where said force is applied, said force,

initially displaying on a display an image of pages  
of a book containing said portion of said set of information,  
and

changing said image to other pages of said book, a  
10 relative position of said other pages corresponding to said  
amount of force and said position of said instrument on said  
sensor as applied by said user.

18. The browsing system of Claim 17, wherein the  
computer-readable medium holds instructions that when executed  
15 by the programmed computer implement steps of:

reorganizing a subset, of said set of information,  
currently being displayed in response receiving said at least  
one transducer signal, said subset of information being  
displayed in an image of side-by-side pages of a book;

20 highlighting a selected subset of said set of information  
in response to receiving an external signal; and

including user-defined information into said subset of  
information selected.

19. The browsing system of Claim 17, wherein at least  
25 one of a word processing software program and a graphics  
processing software program comprises said instructions.

20. The browsing system of Claim 17, wherein a multi-purpose software program, including a multi-media program and a user-interface program, comprises said instructions.

21. The browsing system of Claim 17, wherein a Windows-based operating system includes said instructions.

22. The browsing system of Claim 21, wherein said instructions comprises instructions for combining a mouse-CUM-cursor browsing mechanism with at least one of a flipping operation, sliding operation, flashing operation and a scrolling operation.

23. The browsing system of Claim 17, wherein said computer readable medium includes library instructions that when executed by said programmed computer implement a library mechanism that catalogs said set of information into subsets of information so to be displayed as respective book images.

24. The browsing device of claim 1, wherein said processor comprises a memory encoded with a data structure for transferring browsing commands to said computer, said data structure comprising:

a header field that holds sensor state data;

a first browsing parameter field that holds a command-type value that is indicative said command-type being at least one of,

the force of said instrument on said sensor device,

the position of said instrument on said sensor device, and

the states of a subset of said state-signal  
generating sensors;

a second browsing parameter field that holds a value  
associated with the command-type held in said first browsing  
parameter field, comprising at least one of,

a force value indicative of the force of said  
instrument on said sensor device,

a position value indicative of the position of said  
instrument on said sensor device, and

a state value indicative of the state of a subset of  
said state-signal generating sensors.

25. The browsing device of claim 1, wherein:

said header field of said data structure comprises two  
bytes of data;

said first browsing parameter comprises one byte of data;  
and

said second browsing parameter comprises one byte of  
data.

26. A computer-readable medium whose contents cause a  
computer to perform an operation for displaying a portion of a  
set of information stored in a computer readable memory as a  
book image format, said portion corresponding to browsing  
commands output from a user-actuated browsing device, by  
performing the steps of:

arranging a set of information hosted on a computer into  
a set of books, each book of said set of books comprising a

subset of said set of information;

labeling each book with a respective portion of said subset of said set of information; and

selecting a selected book from the set of books, said

5 selecting step comprising,

displaying said respective portions of said books as book document images comprising pages, said pages

corresponding to said respective portions of said books,

generating a command for moving through said pages,

10 displaying an animated image of said pages of said book document being at least one of flipped, scrolled, slid and flashed, on a display, and

selecting said book when one of said pages containing a predetermined portion of said book is displayed  
15 in said displaying step.

27. The computer-readable medium of Claim 26 whose contents, when executed by the computer, cause the computer to perform additional steps of:

identifying a selected book page of a set of book pages  
20 within said selected book, comprising the steps of,

displaying the selected book as the image of the book document,

generating a move command for moving a pointer through a subset of pages of said selected book,

25 displaying an animated image of said pages in said book document being at least one of flipped, scrolled, slid

and flashed in said display, and

selecting said selected book page in said selected book when the selected book page is displayed in said step of displaying an animated image of pages in said book.

5        28. A computer-readable medium whose contents cause a computer to perform an operation for displaying a portion of a set of information stored in a computer readable memory in a book format image, said portion corresponding to browsing commands output from a user-actuated browsing device, by  
10 performing the steps of:

generating a command to move a pointer through said set of information;

moving said pointer in at least one of a forward direction and a backward direction through said computer-based  
15 set of information in response to said command generated in said generating step;

adjusting a speed of said movement of said pointer through said computer-based set of information corresponding to said command generated in said generating step;

20 jumping to a selected location in said computer-based set of information, said jumping step comprising the steps of,

receiving a jump command, and

moving said pointer from a current position in said computer-based set information to a user-defined jump  
25 position; and

bookmarking a desired portion of said computer-based set

of information, said desired portion comprising a selected subset of a text or a graphics information, said bookmarking step comprising the steps of,

receiving a bookmark command via a user-entry, and

5 marking said desired portion of said computer-based set of information corresponding to said user entry.

are displayed at any given time; and

29. A computer-readable medium whose contents cause a computer to perform an operation for displaying an image of a  
10 flipping page on a computer screen, said flipping page comprising stationary points which are points linked to other pages and moving end points which are points moving with highest linear velocities, comprising the steps of:

deriving a segment from an ellipse or circle;

15 using the segment as an orbit of said moving end points of said flipping page;

generating an animated image of said flipping page by moving said moving end points along said orbit; and

20 interpolating a curved surface between said moving end points and said stationary end points for each of the position of said moving end points on said orbit.